National Renewable Energy Laboratory

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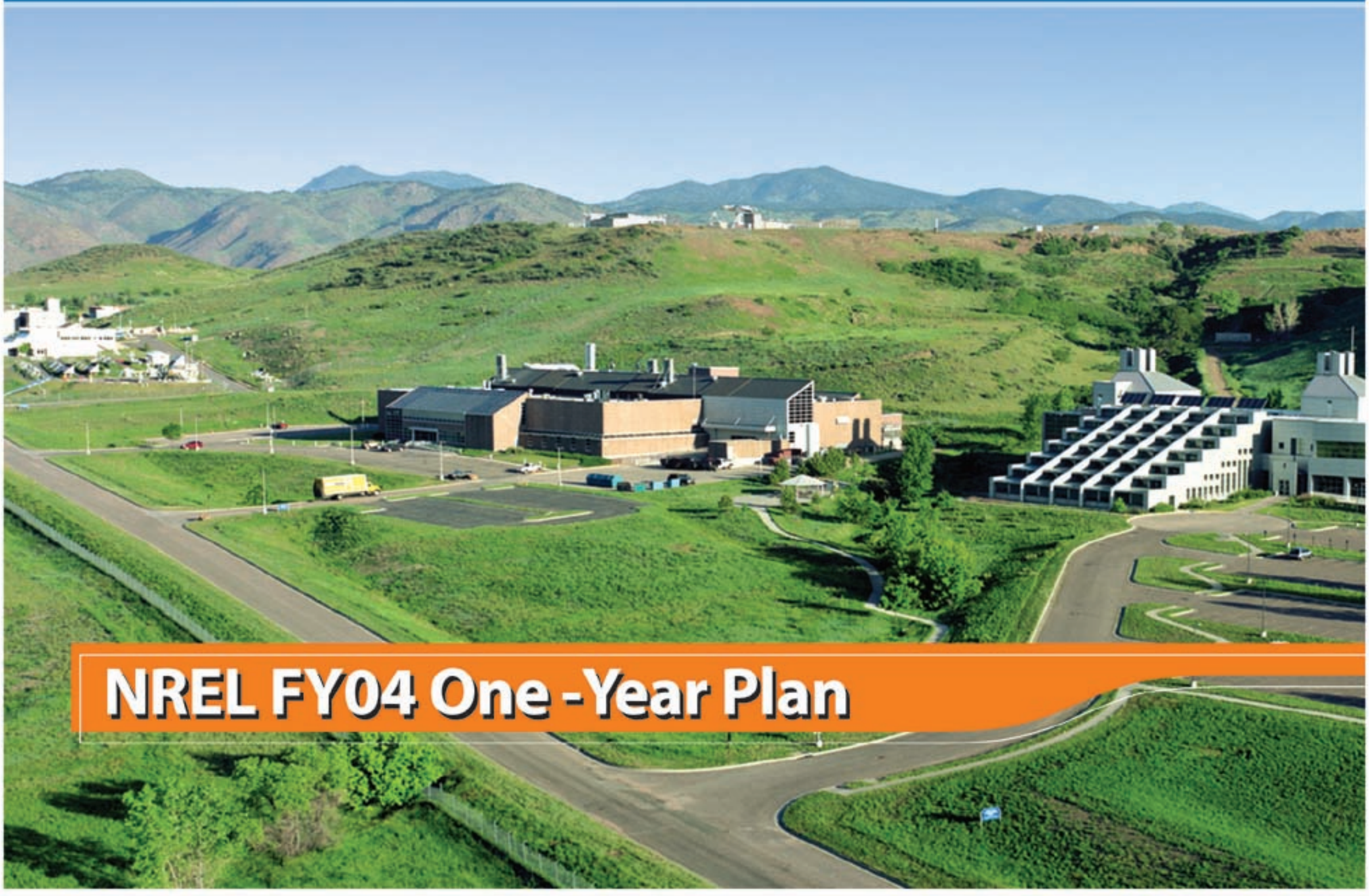

NREL FY04 One -Year Plan

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NREL FY04 One-Year Plan

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I. INTRODUCTION

NREL is a federally funded research and development center (FFRDC) operated under the stewardship of the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) by Midwest Research Institute (MRI) in partnership with Battelle Memorial Institute through a Management and Operating Contract (M&O). DOE's Golden Field Office (GO) is responsible for oversight of the NREL M&O contract with MRI.

MRI uses a performance-based approach to managing the Lab under contract with DOE. This approach is reflected in NREL's integrated planning, budgeting, and assessment process. This process is designed to promote integration across programs and organizations; assure strong alignment of NREL strategy and investments with those of DOE; enable the assimilation and consideration of market and stakeholder input; and provides the performance data needed to efficiently and effectively manage the Laboratory and assure its long-term viability. Through this process, NREL's strategy is translated into specific annual actions, which are documented in this One-Year Plan. This One-Year Plan represents an integrated, institutional view of program, center/office, and initiative annual operating plans. It further identifies key actions to be taken during FY04, establishes the basis for monitoring progress and managing performance, and governs performance reporting to DOE.

NREL's One-Year Plan is structured around Lab-level performance measures (i.e., Critical Outcomes, Performance Objectives, and Performance Indicators) such that work accomplished at all levels of the organization is aligned with the accomplishment of DOE and NREL priorities. The responsibility of the M&O contractor in this context is to establish an environment at NREL that enables outstanding performance in all dimensions of the Lab's business. The structure and focus of NREL's FY04 performance measures reflect this responsibility and make clear that MRI is responsible for ensuring critical outcomes are realized; and that NREL delivers on the commitments in its annual operating plans, produces quality science and technology outcomes, and provides business and operating support that enables the efficient and effective conduct of research.

NREL Mission
NREL develops renewable energy and energy efficiency technologies and practices, advances related science and engineering, and transfers knowledge and innovations to address the nation's energy and environmental goals.

II. PLANNING AND BUDGETING CONTEXT

NREL initiated its FY04 integrated planning process in May 2003 with a call for the Laboratory's office directors and center directors to review their current plans, budgets, and expenditures, and submit proposed annual operating plans for FY04. Initial guidance included assumptions on direct program funding, FTEs, and subcontracts based on input collected from the technology managers. While the planning guidance established a Labor Multiplier target of 2.40, it was clear at the outset that it would be difficult to maintain due to projected increases in pension costs and group medical insurance premiums. Because of these upward pressures, an intensive analysis of NREL's overhead expenditures was undertaken for each organization, function, and other overhead investments by the executive management and the NREL planning team.

NREL executive management directed that the following assumptions be used to guide FY04 planning and budgeting to result in the "best value" to DOE, and enable making the best decisions for the Laboratory:

- Forecast lower direct program new budget authority for subcontracted efforts and an increase in direct program FTEs.
- Initiate a new program for hydrogen systems integration and expand hydrogen R&D work beginning in FY04.
- Maintain the Laboratory's investment strategy through strategic investments and DDRD.
- Meet evolving requirements or make operational improvements that enable efficient and effective mission execution.

- Examine all "base budgets" and fund core activities.

Given NREL's goal and history of aggressive process improvement and managing costs to deliver maximum value to DOE, NREL management began a systematic examination of costs, investments, and spending options. Intense discussions on fringe benefits, overhead budgets, projects, amount of service and the labor multiplier ensued. A number of potential savings opportunities, and creative approaches to funding needed investments, were examined and funding estimates were revised based on continuously updated information. The outcome of these discussions led to the tradeoff decisions among expanding existing functions, investing to improve operations, and investing in new capabilities and opportunities upon which this One-Year Plan is based.

In order to meet strategic and operating objectives, and remain cost effective with a flat multiplier from FY03 at 2.40, NREL has developed and proposes a conservative One-Year Plan for FY04. The Lab faces many uncertainties as it begins FY04. This plan represents the starting point for the Lab, which will be revisited and adjusted accordingly in collaboration with DOE as conditions change.

III. TECHNICAL, INSTITUTIONAL, AND MANAGEMENT OPPORTUNITIES

This section describes the Laboratory's strategic thinking about the opportunity set for NREL as it explores new areas of research and development, builds needed capability, and proposes new program efforts. In addition, opportunities are identified that will enable the Lab to more effectively meet mission requirements as well as support NREL's continuous improvement philosophy. These opportunities:

- Represent a significant opportunity for mission and related scientific discovery and/or advancing DOE objectives.
- Align with or are a component of NREL's overall institutional strategy.
- Require Lab-level management attention and/or potential investment in related capability development, relationship building, opportunity development, or operational improvement.
- In most cases involve actions over multiple years, with the FY04 opportunity focus identified generally in this section and more specifically defined in key tasks under the appropriate Critical Outcomes of the One-Year Plan.

Technical Opportunities

Opportunity: Hydrogen and FreedomCAR

Hydrogen, the most plentiful element in the universe, is an excellent energy carrier. It can be derived from fossil fuels, biomass, or water using fossil, nuclear, or renewable energy. The President's Hydrogen Fuel and FreedomCAR Initiatives established a new national commitment to research and validation projects that will foster the transition to a hydrogen energy economy. Over the next five years, the nation will invest $1.7 billion toward the goal of commercializing pollution-free, hydrogen-powered, automobiles within the next 20 years. The scale and complexity of this challenge cannot be overstated. Significant technical obstacles that exist in production, delivery, storage, safety, and utilization of hydrogen in fuel cells on a massive scale, power electronics, and computational modeling all present formidable challenges. These challenges, coupled with the diverse set of market barriers, will require accessing, integrating, and mobilizing the nation's science and technical resources. New and expanded opportunities for NREL are in renewable production of hydrogen, hydrogen storage in carbon media, technology and systems analysis, fuel cell systems and thermal management, and power electronics. A key priority in FY04 is to launch the proposed virtual center on hydrogen storage on carbon-containing materials. The heavily earmarked hydrogen budget significantly hampers the ability of DOE to execute its planned program. The challenge for NREL is maintaining core capabilities, critical to the future of the program, in light of significantly reduced budgets.

Opportunity: Systems Integration

In response to the President's Management Agenda, its own Strategic Program Review, and reviews by NAPA, EERE is committed to a strategic goal to change the way it does business. To that end, EERE intends to implement systems integration as a business and technical management model across its programs. Systems integration will deliver independent and objective analyses, advice, and planning options that enable DOE to make informed program decisions. This capability will support developing, validating, and maintaining control of the program baselines by analyzing, requirements and interfaces, identifying risks and risk management options, analyzing alternative technology pathways, and supporting performance verification. Having a robust definition of the

system (a macro-system model) is required to understand the interactions between sub-elements of a system and the impact of changes (e.g., scientific and technical advances, market shifts, policy changes) on the overall system and the program. Priorities in FY04 include establishing the capability, developing the integrated baseline for the Hydrogen Program, developing an architecture and plan for a system model, and implementing a peer review process for the program as a whole and for the fuel processing go/no go decision.

Opportunity: Electricity Reliability and Security

A key DOE focus area is improving the reliability and security of the nation's electricity infrastructure. The FY04 budget request establishes a new Office of Electricity Transmission and Distribution with the charter to address the policy and technology issues associated with enhancing the reliability of the nation's electricity T&D infrastructure. A visioning meeting, led by the National Transmission Grid Study, identified broad issues and system characteristics that need to be addressed. Technology developments in areas such as: reducing grid vulnerability; power electronics; electricity storage; distributed energy systems, consumer appliances and equipment efficiency; and environmentally acceptable, affordable solutions for new capacity expansions all present opportunities for NREL. In FY04, NREL will implement projects for OETD related to distribution systems integration and interconnection. Due to constrained budget resources, it is likely that NREL will transition out of the small role that it had in superconductivity.

Opportunity: Biomass

Biomass continues to be a highly strategic, renewable resource in support of energy security and environmental goals outlined in the National Energy Policy, Biomass Products Initiative, and other DOE plans. Several areas of research related to biomass continue to be of high strategic interest to DOE and present opportunities for NREL, including: co-processing of biomass in petroleum refineries as a near-term implementation strategy; advancing the knowledge of carbohydrate chemistry (synthesis, separations, properties, etc.) to a level equal to that of hydrocarbon chemistry; pursuing the understanding and development of biocatalysts and biological molecules through theoretical modeling and laboratory research; characterizing and understanding the role of soil carbon in the carbon cycle; and metabonomics (the study of the function of an entire microorganism, from genes to proteins to the metabolic profile). Enhanced relationships with industry and expanded partnerships with other national labs will be key to realizing the potential of this area. In FY04, NREL will have the challenge of maintaining core capabilities needed to implement DOE's multi-year RD&D plan in light of significantly constrained budgets as a result of earmarks. NREL will pursue a strategic hire in bioinfomatics with capabilities that can lead to new research areas in the future at the nexus of computational science and biotechnology.

Opportunity: Solid-State Science and Technology

The promise of solid-state materials continues to excite the technical community as computational science, materials science, and sophisticated characterization methodologies continue to advance. Examples include organic ("soft semiconductors") or other advanced semiconductors for solar cells or solid-state lighting, superconducting materials, flexible electronic materials, new materials for building exteriors with programmability for reflectivity or refraction, thermoelectric materials for converting low levels of waste heat to electricity, and catalysts of a wide variety for renewable applications. Nanostructures of all types also remain a cutting-edge R&D area, with applicability to NREL's interests in renewable electricity generation, hydrogen storage, carbon conversion, and catalysis. In FY04, NREL will again respond to the Office of Science call for proposals in nanoscience and technology, the laboratory will continue to explore with EERE potential opportunities to leverage research efforts in photovoltaics and solid-state lighting, and NREL will respond to the expected call for laboratory proposals and partner with industry in their response.

Opportunity: Increase the Impact of Energy Efficiency and Renewables

Renewables represent a secure and inexhaustible supply of energy that can complement and extend energy sources that are depletable and/or unreliable and serve as a hedge against energy price volatility for resources whose supply is variable. Enabling renewables to make a larger contribution to the nation's energy supply mix will, therefore, result in a more diverse and stable energy future for the United States. Efforts to change the nation's electricity mix must include a strong focus on advancing science and technology that enables making the most productive use of electricity so that the growth in demand for new

electricity generation is slowed while still supporting economic prosperity. To complement demand productivity, advances in renewable technologies are needed to drive down their cost and increase their reliability. The potential for significant advancements in renewable energy technologies remain in each of the EERE program areas. However, the greatest gains will come at the interfaces among technologies and systems – where elements can be integrated and optimized to create stronger overall systems. In addition, water is emerging as a significant issue both from an availability and quality perspective. Given that the largest users of water in the U.S. are agriculture (implications for biomass) and power production, the nexus between energy and water is emerging as an important opportunity. In FY04, NREL will invest to develop the systems architecture and begin to develop a prototype Renewable Electric Energy Decision (REEDM) model that will enable assessment of renewable and renewable/hybrid pathways to electricity from a systems perspective that spans from resource utilization through production.

Institutional and Management Opportunities

Opportunity: Human Capital Management

NREL's human capital is vital to its ability to meet evolving mission requirements. The talent pool from which NREL will need to draw is expected to increase in diversity requiring expanded approaches to attract and retain staff with the right skill mix. Equally important is the ability to capture and utilize the expertise that exists outside of the Institution to foster innovative research thinking. Results from program and technical peer reviews, the National Advisory Council review, and DDRD reviews as well as from NREL's enhanced annual planning process have identified strategic hiring needs in Hydrogen, Materials and Bioinfomatics. In FY04 NREL will begin the process of making these hires a reality, in addition to closing on important additions to the Systems Integration effort. In concert, NREL will continue to demonstrate robust and effective programs related to outreach and educational opportunities for ongoing collaborations through its research participant program, education program, and subcontracting efforts that enable people with new ideas and talents to contribute to research of mutual interest at the Laboratory. In order to strengthen NREL's long-term vitality and relevance, an approach to creating an Integrated Staffing Plan will be developed. This Plan will link multiple business functions from future projections of programmatic and scientific needs with a current assessment of critical skills and demographics and to recruitment and educational outreach activities. NREL will continue to assess and respond to information derived from the Benefit Value Study, the Staff Survey, and other employee input in order to attract and retain those skills critical to the Laboratory. As an ongoing effort to be competitive, NREL will request changes to the Benefit Program that meet the Lab's strategic objectives and are cost effective. As such, NREL will implement the Personal Time Off program in FY04 and will continue to encourage DOE approval of the post retirement medical benefit.

Opportunity: Land Utilization and Facilities

There are several dimensions to this opportunity to enhance the Lab:
1) effectively using the land NREL has available for meeting known and future mission requirements, 2) alleviating space availability constraints – especially laboratory space, and 3) refining our facility acquisition strategy to result in greater success. The articulation of a compelling business case is needed to motivate investments in space and facilities in the context of implementing the Laboratory's master site plan and the value these facilities bring in advancing DOE program objectives. Multi-year facility construction plans indicate that, in the best scenario, NREL will not have a significant new facility until FY07. In the near term, innovative solutions to NREL's current lab and workspace requirements must be found. Efforts in FY04 will focus on initiating construction of the S&TF, and implementing GPP projects targeted at providing new laboratory capability.

Opportunity: Technology Transfer

The success of NREL's mission requires that our knowledge and technologies deliver impact in practical applications. One measure of success is private sector companies using and commercializing our technologies to achieve market success. Technology transfer involves information exchange, relationship development, and structuring partnerships between technology providers and end-users, leading to valued market applications for knowledge and technologies developed at NREL. NREL's goal is to be "best in class" in technology transfer among the DOE laboratories, and to be the preferred partner for companies commercializing products based on our knowledge and technology.

During the past several years, NREL has made significant investments in developing new technology transfer tools such as the National Alliance of Clean Energy Incubators and expanding the reach of the NREL Clean Energy Industry Growth Forums to the corporate investor and financial community. We implemented continuous improvement projects in key areas such as technology licensing, and revised our strategies for managing NREL partnerships with companies.

The key opportunities in the coming year are *integration* of our partnership strategies across all organizational lines, and *continuous improvement* of our execution tactics. The strategy integration is aimed at creating consistent corporate objectives and approaches toward technology partnerships across NREL. This will enhance the Laboratory's impact by focusing on common objectives across programs, consistently applying best practices, and building NREL's technology marketing outreach and brand image with current and prospective partners. Continuous improvement of our technology transfer execution tactics increases our efficiency and utilization of resources. During the coming year we will continue to improve execution of technology partnerships and license agreements, revise our process for maintaining our patent portfolio, continue to enhance control of intellectual property costs, and implement the recommendations of the newly established TPA team. We will continue our leadership roles and involvement in professional technology transfer organizations, and use these opportunities to bring best practices to the laboratory and to enhance NREL's visibility with outside organizations. These opportunity areas reflect key elements of becoming recognized as "best in class" for the DOE.

Opportunity: Management System Enhancements

Investments in work process automation, modernization, integrity, and integration to build management systems that effectively and efficiently enable mission success will continue to provide great benefit to NREL. A sustained investment and integrated process perspective are needed to maintain and enhance our current "good and best practices," develop new systems, continue to reduce costs, and provide best value to internal and external clients. The outcome of this investment over time will be a more effective and efficient Laboratory that is able to manage costs while maximizing contributions to mission execution. Maintaining and enhancing NREL's electronic (cyber) infrastructure and tools is a critical element to continued improvement. In FY04, an Oracle system upgrade will be completed that provides the foundation for many of the planned electronic applications. Additionally, electronic processes for purchase card transactions and purchase requisitions will be implemented and an evaluation of time sheet and labor costing software will be conducted.

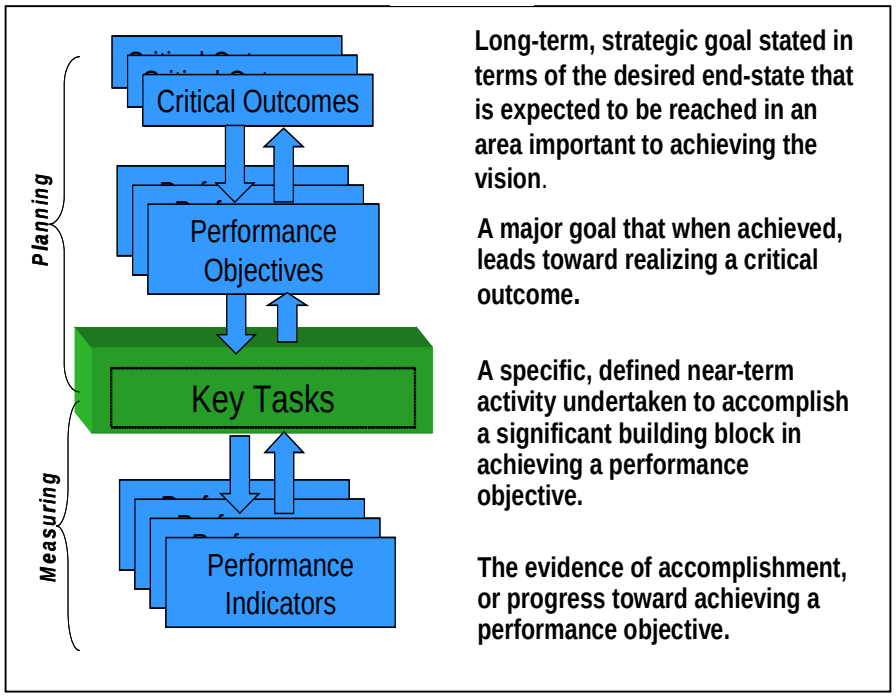
IV. FY04 CRITICAL OUTCOMES, PERFORMANCE OBJECTIVES, INDICATORS, AND KEY TASKS

This section of the plan lays out NREL's FY04 performance measures (i.e., Critical Outcomes (COs), Performance Objectives (POs), and Performance Indicators) as well as the specific activities that will be undertaken during the year to achieve them (i.e., Key Tasks). NREL's COs, POs, and PIs are part of the Lab's Performance Evaluation Plan, and represent the framework for its mid-year and year-end self-assessments, as well as DOE's evaluation of performance (Figure 1).

Key Tasks are documented in program, initiative, and organizational Annual Operating Plans (AOPs) and are a key element of ensuring alignment of investments and organizational activities with NREL priorities and objectives. Specific performance milestones, targets, and metrics are defined within each key task as part of these AOPs.

Performance assessment begins with a critical examination of progress and accomplishment against each key task - the results being indicators of performance against the Laboratory's POs. Performance against the POs is then integrated and evaluated in terms of degree of progress made under each of NREL's COs.

Figure 1



CO 1.0 Science and Technology

MRI will deliver high quality scientific and technological outcomes that advance DOE priorities and Program objectives.

NREL delivers world-class scientific research, and develops technologies based on this research, to further the missions of DOE and address critical national needs. Being successful in achieving this outcome requires not only world-class scientific staff, state-of-the-art R&D facilities, and effective operational support and management, but also insightful understanding and analyses of the national needs and the technological opportunities, enriching collaborations and interactions within the appropriate R&D communities, experience and creativity to effectively move technologies into the marketplace, and effective and responsive management of programs and projects. During FY04, NREL will continue to enhance its effectiveness, and alignment with evolving DOE practices, through: 1) peer review to guide R&D planning, prioritization, and investment; 2) program management practices, that maximize the effectiveness of DOE investments at NREL; and 3) technology transfer practices that result in the maximum impact of DOE investments in meeting national needs.

PO 1.1 Demonstrate the quality of scientific and technological outcomes.

- PI 1.1.1 Results of external and peer reviews validate the quality and impact of programmatic technical and/or analytical outcomes.
- PI 1.1.2 External recognition focused on NREL's technical and/or analytical work and outcomes: a) external awards and recognition; b) peer reviewed publications, and c) number of patents awarded.

Key Tasks:

1. Publish R&D and analysis results in peer-reviewed forums, journals, and conferences.
2. Monitor success rate in researcher compliance with NREL's publication process.
3. Identify candidates for external awards of distinction such as R&D 100 awards, Discover Awards, etc., and provide the necessary support to compile the nomination packages for submission.
4. Provide support for and conduct advisory boards, other peer reviews, or internal reviews of the major research areas at NREL such that they complement DOE-directed peer reviews.

PO 1.2 Demonstrate excellence in program planning and management, producing S&T accomplishments that advance DOE and program objectives.

PI 1.2.1 Effective partnering and communication occurs between NREL and DOE program managers as acknowledged by program managers.

PI 1.2.2 Program planning activities result in sound technical plans and well developed, longer-term program directions as acknowledged by customers/stakeholders and peer and other reviews.

PI 1.2.3 Project management performance as measured against key milestones, budgets, subcontracting goals, and other commitments as negotiated and represented in approved AOPs.

PI 1.2.4 Programs and projects produce significant research and development accomplishments that positively impact the advancement of DOE missions and program goals.

Key Tasks:

5. Develop program AOPs that clarify scope, schedule, and budget for NREL-managed work and deliver programmatic milestones within budget and on schedule.
6. Oversee and integrate the work of NREL subcontractors with in-house research and development to accomplish technical objectives.
7. Maintain clear program interfaces and support structures that facilitate NREL internal integration and communication with EERE program managers.
8. Manage subcontracting activities to obtain best in class capabilities that meet or exceed targets for competition and produce significant S&T outcomes.
9. Produce significant research and development and programmatic accomplishments identified in the individual Program AOPs and project plans.
10. Provide effective program management:
    - Work with EERE to develop and implement program management principles and best practices that support the implementation of its interim corporate management system.
    - Bring forward ideas for new efforts that will advance EERE program objectives.
    - Develop and effectively implement program AOPs.
    - Maintain program interfaces and support structures that facilitate communication with EERE and enable effective program management and execution.

PO 1.3 Enhance market impacts of EERE technologies through technology transfer.

PI 1.3.1 Private sector partnerships have been developed to commercialize NREL technologies.

PI 1.3.2 Barriers to the use of NREL technologies are removed.

Key Tasks:

11. Negotiate licenses resulting in market impacts of NREL-developed technologies.
12. Develop and implement CRADAs and WFO projects to support commercialization of EERE supported technologies.
13. Catalyze the market success of entrepreneurial companies developing EERE technologies through NREL's Growth Forum and the National Alliance of Clean Energy Incubators.
14. Integrate NREL's technology transfer strategy across all organizational units.

15. Enhance the effectiveness of technology transfer at NREL through implementation of best practices and continuous process improvement.
16. Ensure dissemination and use of programmatic outcomes through Web site communications, publications, and presentations.

CO 2.0 Leadership

MRI will lead NREL as an FFRDC to create opportunities that significantly advance the EERE mission while enhancing NREL's role as a recognized national and international asset.

As an FFRDC, NREL is a partner with, and strategic advisor to, DOE. In this capacity NREL plays a key role in advancing DOE's mission through its work focusing on discovery, development, and systems integration in broad technology areas, all of which improve our nation's energy security, electricity reliability, local and global environment, and efficiencies of energy production and use. Commensurate with its FFRDC responsibilities, NREL provides leadership by integrating the science and technology expertise and viewpoints of industry, academia, and DOE through collaborative activities such as technology roadmapping, scenario planning, technology forums, and strategic planning, as well through a variety of peer, industry, and stakeholder reviews addressed in CO 1.0. NREL also uses a broad range of partnership mechanisms to deliver on EERE's mission, including competitive contracting, Cooperative Research and Development Agreements (CRADAs), and cost sharing partnerships.

Institutional strategy is used to guide investments made at NREL. Over the past five years, strategic investments have been used to identify and assess potential opportunities and build the relationships needed for working in these areas. Strategic investments made over the past five years have covered the following topical areas:

Year	Focus
1999	Bioenergy, Carbon Management, Distributed Energy, Environmental and International Renewable Energy Development
2000	Scientific Computing, Nanoscience, Bioenergy, Carbon Management, Distributed Energy, Environmental and International Renewable Energy Development
2001	Enhanced Analysis, Natural Gas, Bioenergy, Carbon Management, Distributed Energy, Environmental and International Renewable Energy Development, Nanoscience, and Sustainable NREL.
2002	Hydrogen, Distributed Energy Modeling, Sustainable NREL, Analysis, Bioenergy, Nanoscience, Environmental and International Renewable Energy Development, and redesign of NREL's WEB presence.
2003	Solid State Lighting, Fuel Cells in Buildings, Air Quality, Hydrogen, Nanoscience, Environmental and International Renewable Energy Development, and Sustainable NREL.

The technical, institutional and management opportunities described earlier in this plan provide the backdrop for the identification of strategic investment to be made in the coming year. In FY04, NREL's strategic investments will emphasize: continuing the successful nanoscience and international development efforts; and strategic roles in hydrogen, solid-state lighting, carbohydrate chemistry, air quality, and energy infrastructure assurance. In FY04, NREL has transitioned Sustainable NREL from an initiative to an ongoing function, i.e., part of our base activities.

PO 2.1 Demonstrate leadership in developing new opportunities for NREL.

- PI 2.1.1 Ideas, analysis, and other input from NREL impacts/influences the strategic direction of DOE program or business strategies as acknowledged by customers, stakeholders, reviews.
- PI 2.1.2 Participation in technical and other forums influences national priorities, policy, or program directions.
- PI 2.1.3 TPA projects are established, conducted, or expanded; providing opportunities to advance EERE goals and objectives.

Key Tasks:

17. Deliver NREL's lab-level opportunity development investment (program, strategic, and businesses) portfolio that positions the Laboratory for expanded and/or new program opportunities and that is linked with the DDRD investments where appropriate. Initiatives will focus on nanoscience and international development efforts; and strategic roles in hydrogen, solid-state lighting, carbohydrate chemistry, and energy infrastructure assurance.
18. Develop and implement WFO and funds-in CRADA opportunities that leverage DOE program resources and accomplishment of programmatic objectives. Specifically, relationships with the commercial sector, NGOs, state organizations (e.g., ASERTTI, NASEO, ECOS, specific state agencies), and other federal agencies that expand domestic and international markets for and use of EERE technologies will be sought.
19. Develop proposals to the Office of Science in nanotechnology and computational science that advance areas of fundamental knowledge relevant to NREL applied programs.
20. Conduct strategic analyses and provide advice to EERE and NREL executive management regarding issues and opportunities.
21. Develop and pilot the use of EE and RE technologies in Sustainable Environmental Management Systems.
22. Hold the next Energy Analysis Forum.

PO 2.2 Provide leadership in establishing and implementing the systems integration function for EERE.

PI 2.2.1 The preliminary systems integration foundation is established and reviewed externally.

PI 2.2.2 The first version of the integrated baseline for the DOE Hydrogen Program is developed and validated.

Key Tasks:

23. Implement the DOE approved FY04 Annual Operating Plan (hire systems integration lead and team members; develop plan for the macro systems model; define and document an Integrated Baseline including the technical and programmatic baselines; support Hydrogen risk management and configuration management process; develop program recommendations for DOE for out-year planning; develop and implement plan for systems integration support to program analysis activities).

CO 3.0 Technical and Scientific Viability

MRI will ensure the long-term viability of the Laboratory by building and enhancing NREL's technical capabilities.

As the operator of an FFRDC, MRI is committed to the long-term viability of NREL and has a critical role in ensuring NREL's long-term ability to deliver critical R&D outcomes in support of EERE Programs and DOE missions. In FY04, MRI will continue to emphasize building the core technical capabilities of the Laboratory through investment that result in discovery, engaged staff, enabling infrastructure and facilities, and leading edge scientific equipment all focused on DOE's critical needs. NREL will continue to implement an aggressive DDRD program that fosters discovery, knowledge creation, and the development of R&D capabilities. NREL will manage the DDRD such that investments support the longer-term strategy of the Lab, as well as foster exploratory R&D and fundamental discovery. In addition, NREL's staffing plan includes specific strategic hires to be made in areas critical to NREL and DOE's future. Finally, NREL will continue to plan for the long-term development of its sites and continue the implementation of these plans through capital investments aligned with strategy.

PO 3.1 Build, enhance, and sustain NREL's scientific, engineering, and analytic capabilities.

PI 3.1.1 NREL technical capabilities are enhanced to effectively provide for long-term program needs and the Laboratory's sustainability and environmental goals. (e.g., staff, facilities, equipment, and discovery that enable science and technology work at NREL):

- Leadership and staff expertise: strategic hires, key staff additions, staff development assignments, training, and experiences
- Facility capabilities: enhancements to, and/or completed milestones in constructing/operating new facilities that represent added capability

- Equipment: enhancement and/or addition of scientific equipment
- DDRD investments and outcomes: new concepts/discovery/capability building

Key Tasks:

24. Deliver an effective and compliant Director's DDRD program comprised of a balanced portfolio designed to yield significant technical outcomes that enhance Laboratory capabilities, prove innovative new concepts, and provide the basis for establishing new research areas. FY04 strategic investments of DDRD will be made in: further development of the Renewable Energy Electric Decision Model (REEDM), building distribution system R&D capabilities, "Computational Modeling of H2-Producing Biocatalyst Structure, Function and Interactions with Substrate," building of NREL's hydrogen R&D capabilities, and building database infrastructure capabilities for analytical needs.
25. Identify requirements and add/replace equipment to enhance NREL scientific and technical support to programs. Pursue the development of new facilities, equipment, and software needed to accomplish NREL's mission.
26. Secure at least one strategic hire in either hydrogen, materials or bioinfomatics.

CO 4.0 Mission Support

MRI will manage and enhance NREL business and management systems, work processes, and capabilities to provide an effective and efficient work environment that enables the execution of NREL's mission.

NREL strives to be a best value provider in supporting EERE and DOE missions and goals. In order to achieve this status, NREL must focus on delivering management systems and associated work processes and tools that effectively and efficiently enables NREL's S&T mission. To that end, NREL continues to drive continuous improvement in its business and operating systems. Although systematic investments in continuous improvement have proven effective in managing cost and enabling mission execution, it is recognized that this momentum must be maintained.

Focus areas have been identified for FY04 and follow from the strategic opportunities described earlier in this plan. Investments in work process automation, modernization, integrity, and integration to build management systems that effectively and efficiently enable mission success will continue to provide great benefit to NREL. A sustained investment and integrated process perspective are needed to maintain and enhance current "good and best practices," develop new systems, continue to reduce costs, and provide best value to internal and external clients. The outcome of this investment over time will be a more effective and efficient Laboratory that is able to manage costs while maximizing contributions to mission execution. Maintaining and enhancing NREL's electronic (cyber) infrastructure and tools is a critical element to continued improvement. NREL will continue to place emphasis on developing metrics that help internal and external customers and stakeholders understand and act, as needed, on business and operating management system performance.

PO 4.1 Deliver efficient, effective, and responsive business and operational support.

- PI 4.1.1 NREL's business and operational management system's processes, products, and services are effective, efficient, and valued as determined by appropriate management system/process performance metrics.
- PI 4.1.2 Performance against functional-level key task priorities as documented in AOPs, NREL/GO performance agreements, and the NREL One-Year Plan, for the following management systems: financial systems and management; site and facilities management; procurement and subcontracting; information services; human resource management; legal support; requirements management and implementation; security; and quality management, integrated planning, budgeting, and assessment.
- PI 4.1.3 Progress against the goals and objectives of Sustainable NREL and those stated in the GO/NREL "Performance Agreement for Energy Management."

Key Tasks:

IT Infrastructure

27. Provide quality customer services and support for information technology. These include, but are not limited to, research-related desktop applications, hardware and software standards, purchasing, installation and troubleshooting, software licensing, network infrastructure problem resolution, business application integration, desktop system management and customer services survey analysis.
28. Provide a secure cyber infrastructure. Track and report monthly statistics for CIAC advisories, virus infections, cyber security incidents.
29. Track and report priority and status of Integrated Business Systems projects and metrics on application service requests and software issues.
30. Implement vital records program that will identify and help protect those records essential to continuing NREL operations under other than normal business conditions.
31. Provide quality administration of records management program; report quarterly and annual metrics on implementation of records schedules and on the number of records transactions completed.
32. Provide quality, cost-efficient telecommunications services and develop appropriate performance metrics.
33. Provide a reliable and stable IT infrastructure. Track and report monthly the availability of the following infrastructure services: NT, UNIX, Oracle, e-mail, telecommunications, networks, and Internet.
34. Evaluate and identify resources necessary to implement appropriate requirements for the revised DOE O205.1 on Unclassified Cyber Security.
35. Provide quality Publications Services; report quarterly and annual metrics on Laboratory publishing activity.
36. Provide relevant and cost-effective Library Services; report quarterly and annual metrics on use of services.

Security Management

37. Conduct annual security awareness refresher training with a target completion rate of 100%.
38. Conduct emergency exercises, identify lessons learned, and implement corrective actions and improvements.

Site and Facilities Management

39. In collaboration with GO; update, implement, and meet the Property Management Balanced Scorecard goals appropriate for NREL, consistent with the DOE-HQ model.
40. Benchmark NREL's Site Operations cost performance with industry/government; janitorial costs, building maintenance costs, preventative maintenance backlog, acquired light-duty alternative fuel vehicles. Use metrics.
41. Allocate and manage Laboratory GPE/GPP resources in aggregate to meet planned milestones and produce intended outcomes/deliverables, dependent on authorized funding.
42. Incorporate Sustainable NREL concepts into construction project designs.
43. Implement DOE Vehicle Fleet Reduction Plan.
44. Support the submittal of DOE field capital budget call (FY06) including five-year capital program plan, construction line items, GPP and GPE.
45. Update and implement phased Building 16 Comprehensive Plan contingent on funding.
46. Update FIMS to maintain an accurate database consistent with DOE-HQ requirements and based on updated facility condition assessment.
47. Update the NREL Site Development Plan
48. Incorporate Sustainable NREL into Site Operations functions: water management, recycling, alternative fuel vehicles.
49. Develop process to update Condition Assessment Survey database.
50. Provide timely support to GO/EERE for an ESAAB approval of CD-3 for the S&TF Project. This support shall be the submittal to GO of all core project documentation as outlined in OECM's Project Management Manual and expeditious responses to ESAAB questions and comments.
51. Initiate S&TF construction in FY04 contingent on EERE approval of CD-3 and dependent on authorized CLI funding.
52. Conduct quarterly Design Advisory Board sessions.

Financial and Contract Business Management

53. Develop Service Center program and indirect budgets, perform analysis, and make recommendations.
54. Maintain Management Reporting and Financial Analysis program and indirect budgets; perform analysis and make recommendations for management to meet budgets.
55. Continue to provide timely support and guidance for financial closeout of WFO and capital projects to meet DOE GO and DOE HQ requirements.
56. Perform analysis and recommendations to maintain NREL negotiated indirect rates.
57. Perform two Make-or-Buy studies in FY04.
58. Continue to implement the recommendation of the TPA/WFO Assessment Team as directed by Executive Management.
59. Effectively monitor and manage the NREL Purchase Card Program.
60. Meet agreed upon balanced scorecard procurement goals for Contracts & Business Services.
61. Reduce the backlog of older (10 years of more) cost-type subcontracts by 40% (from 52 to 30), through expansion of the university accelerated close-out process to commercial agreements.

Quality Assurance

62. Support NREL research centers' quality requirements through assessments, audits, training, and other methods and tools.
63. Complete quality assurance assessment of Human Subjects and Export Control Implementation at NREL.

Human Capital Management

64. Integrate research participant program activities in HR, Education Program, and Subcontracts to leverage resources and target underrepresented student populations in order to increase the number of individuals from diverse backgrounds at the Laboratory.
65. Redesign Performance Appraisal System by incorporating core leadership competencies, improving performance feedback, and identifying high potential employees for future skill development.

PO 4.2 Strategic investments result in enhanced business and operational support processes and capabilities.

- PI 4.2.1 Progress against key Lab-Level business and operational improvements/enhancements as demonstrated by meeting planned milestones and budgets, including setting baseline metrics.
- PI 4.2.3 NREL support capabilities are strengthened through succession planning, key staff additions, staff development assignments, training, and broadening experiences.

Key Tasks:

66. By benchmarking with organizations known as best in class for strategic staffing, provide executive management with a process for creating a longer-term staffing strategy that best manages the most critical gaps/surpluses across planning periods.
67. Implement FY04 Sustainable NREL Mater Plan FY04 revision.
68. Implement initial systems for Electronic Processing Initiative.
69. Complete all FY03-04 Lab-level staff survey actions resulting form the FY02 Staff Survey:
    a. Implement telecommuting program based on pilot results
    b. Complete actions on awards and recognition
    c. Complete actions on staff development
    d. Conduct management-directed assessment of recharge system

70. Conduct FY04 NREL Staff Survey, present analysis of results, and oversee resulting Lab-level actions. Assess survey options for future survey administration.
71. Develop and implement an integrated set of policies and procedures that are supportive of Laboratory operational needs and responsive to evolving DOE directives in the areas of:
    a. Integrated safeguards and security management (ISSM), as initiated in FY03,
    b. Foreign national management, and
    c. Counterintelligence.
72. Prepare for an FY04 Safeguards and Security Periodic Audit conducted by DOE headquarters elements by:
    a. Participating in security program surveillances conducted by the Golden Field Office,
    b. Conducting Self-assessments of security programs, and
    c. Implementing corrective actions in response to Surveillance and Self-Assessment findings.
73. Develop appropriate performance metrics in the following functional areas: alternative fuel vehicles, lab and office utilization corrective and preventative maintenance.

CO 5.0 Environment, Safety, and Health

MRI will protect the safety and health of the NREL workforce, the community, and the environment.

NREL will continue to sustain and enhance the safety and health protection of NREL staff, the community, and the environment. In FY04 NREL will focus on:

- Maintaining and enhancing an integrated set of ES&H programs that are responsive to changing Laboratory needs and deliver desired performance results in an effective and efficient manner.
- Continuing implementation of planning and management tools that support site development while identifying and addressing environmental concerns. Demonstrating NREL leadership in ES&H through pursuit of external recognition and/or certifications.
- Enhancing deployment of energy efficiency and renewable energy technologies through appropriate partnerships with external ES&H entities.

PO 5.1 Sustain excellence in safety, health, and environmental protection.

- PI 5.1.1 Proactive identification and correction of issues and problems (e.g., self-assessments, surveillances, etc.).
- PI 5.1.2 NREL's ES&H performance relative to agreed upon performance goals.
- PI 5.1.3 Outcomes and achievements that demonstrate effective ES&H management for the Lab.

Key Tasks:

74. Participate in the GO Surveillance Program.
75. Complete self-assessments of selected environment, safety, health, security, and emergency management programs.
76. Develop and implement corrective action plans in response to areas for improvement identified via surveillances and self-assessments.
77. Maintain Lab ES&H performance against DOE, industry, and best-management baselines.
78. Identify ES&H trends and develop and implement necessary and appropriate corrective actions via established management mechanisms (e.g., Safety Council, Safety Subcommittees).
79. Continue coordination and implementation of Sustainable NREL with the Laboratory Environmental Management System (EMS).
80. Develop scope statements and budget requirements for migratory bird, wildlife, and cultural resource surveys in support of planned development of the South Table Mountain Site.

PO 5.2 Identify and implement enhanced ES&H processes, practices, systems, and tools that enable the Laboratory to better meet its ES&H goals.

PI 5.2.1 Opportunities for enhancing NREL's ES&H management systems (e.g., ISM or sub-elements such as risk management, NEPA, and other environmental management processes) are identified and an action plan is established.

Key Tasks:

81. Continue the pursuit of environmental management system (EMS) leadership recognition through the EPA National Environmental Performance Track (NEPT), as initiated in FY03.
    a. Complete the third-party review of the NREL EMS and implement necessary system improvements identified during the review.
    b. Achieve and maintain the NEPT certification.
    c. Pursue new leadership opportunities within the EPA program via Laboratory outreach and deployment activities (i.e., Energy and Environmental Applications).
82. In conjunction with the EPA NEPT, simultaneously pursue EMS leadership recognition through the Colorado Department of Public Health and Environment (CDPHE) Environmental Leadership Program.
83. Implement improvements identified through assessments and reviews of environment, safety, health, security, and emergency management programs.

CO 6.0 Outreach and Stakeholder Relations

MRI will build strong and productive relationships and alliances with stakeholders, advance awareness and support of the DOE renewable energy and energy efficiency mission, and advance math, science, technology, and engineering education.

While continuing to strengthen NREL's outreach, communication and education programs, emphasis will be placed on enhancing relationships with stakeholders, the media, and other laboratories to build partnerships, leverage resources and increase effectiveness in implementing DOE's outreach goals; developing and implementing a consistent corporate identity that will enhance the awareness of DOE and NREL; and continuing to build an education program that advances math, science and technology energy education.

PO 6.1 Promote awareness of DOE/EERE and NREL missions and technologies, and build relationships that support the strategic directions of the Laboratory.

PI 6.1.1 Stakeholder relationships and networks are established, maintained, and enhanced in support of the DOE/NREL mission.

PI 6.1.2 Opportunities for enhancing institutional visibility and reputation are created and implemented.

PI 6.1.3 Quality institutional communications products are developed and recognized as supporting the advancement of DOE/NREL goals.

Key Tasks:

84. Implement outreach strategies to increase visibility of the Laboratory and energy efficiency & renewable energy technologies and to enhance DOE and NREL's reputation nationally, regionally, and internationally.
85. Implement stakeholder networking strategies that build critical relationships and enhance laboratory visibility.
86. Develop quality communications products that are recognized as supporting the advancement of DOE's programs and technologies.
87. Establish a corporate identity for NREL that complements DOE's outreach and identity goals.

PO 6.2 Demonstrate value as a corporate citizen within the community.

PI 6.2.1 Opportunities for positive local community involvement and demonstration of good corporate citizenship are created and implemented.

PI 6.2.2 The Visitors Center is strengthened as a local community and DOE/NREL asset.

Key Tasks:

88. Leverage corporate partner support to broaden NREL's standing as a local community asset and valued corporate citizen.
89. Enhance use of the Visitors Center as an outreach tool for increasing student and public awareness of DOE and NREL.
90. Leverage opportunities with local governments, civic organizations, and communities to enhance DOE's and NREL's visibility and promote use of EERE technologies.

PO 6.3 Implement programs that advance high quality science, mathematics, technology, and engineering education.

PI 6.3.1 Available resources are effectively utilized for conducting DOE's science, mathematics, technology, and engineering education programs, and for positioning NREL as an education leader.

PI 6.3.2 Results of education evaluation tools and protocols indicate that NREL education programs are effectively conducted and meet or exceed DOE National Laboratory education program standards.

Key Tasks:

91. Conduct intern research programs that support DOE's education mission, promote renewable energy and energy efficiency career development, and provide educational enrichment opportunities.
92. Develop, conduct, and expand educational programs, activities, and events that target underrepresented student populations and further augment NREL's educational outreach capabilities.
93. Pursue opportunities for new and enriched partnerships with the education and business community that will enhance NREL's visibility and credibility as a contributor to quality science, mathematics, technology and engineering education, and position NREL as a science education leader.